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10/705,238

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Dae-Jong Jang

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STAAS & HALSEY LLP  
SUITE 700  
1201 NEW YORK AVENUE, N.W.  
WASHINGTON, DC 20005

EXAMINER

KAYRISH, MATTHEW

ART UNIT

PAPER NUMBER

2627

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                       |                                    |  |
|------------------------------|---------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/705,238  | <b>Applicant(s)</b><br>JANG ET AL. |  |
|                              | <b>Examiner</b><br>Matthew G. Kayrish | <b>Art Unit</b><br>2627            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) 16, 32, 45, 53, 61 and 67 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-15, 17-19, 22-31, 33-39, 42-44, 46-48, 51, 52, 54-56, 59, 60, 62-66, 68, 69 and 72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Continuation of Disposition of Claims: Claims pending in the application are 1-3,6-15,17-19,22-31,33-39,42-44,46-48,51,52,54-56,59,60,62-66,68,69 and 72.

**DETAILED ACTION**

***Response to Arguments***

***Claim Rejections - 35 USC § 103***

Applicant's arguments with respect to claims 1-3, 6-19, 22-39, 42-48, 51-56, 59-69 and 72 have been considered but are moot in view of the new ground(s) of rejection. The amendments to claims 1, 17, 35, 46, 54 and 66 have been entered. Claims 16, 32, 45, 53, 61 and 67 have been canceled. Claim 73 has been added.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6-15, 17-19, 22-31, 33-39, 42-44, 46-48, 51, 52, 54-56, 59, 60, 62-66, 68, 69 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Santo et al (US Patent Number 6587284), in view of Kasuga et al (US Patent Number 5844881).

Regarding claims 1, 8-11, 14, 15, 17, 24-27, 30, 31, 35, 43, 44, 46, 52, 54, 60, 66, 67 and 73, Santo et al, in view of Kasuga et al disclose:

An optical recording and/or reproducing apparatus for a disc, comprising:

An optical pickup, comprising:

An optical pickup actuator for an objective lens, comprising:

An optical pickup actuator driving an objective lens movably installed along a radial direction of the disc (column 1, lines 24-31) to record information on the disc and/or reproduce information recorded on the disc (column 1, lines 7-12);

An optical pickup actuator performing biaxial, triaxial, or quadriaxial movements (figure 11c, current indicated by arrows  $I_f$ ,  $I_t$  and  $R_t$  represent focus, tracking and tilt) by controlling direction of current applied to the first and second focusing/tilting coils (column 17, lines 28-40);

Wherein the optical pickup actuator includes:

A base (figure 10, item 10);

An objective lens focusing light emitted from a light source (figure 10, item 1);

A bobbin (figure 10, item 51) holding the objective lens (figure 10, item 1);

A support (figure 10, item 53) fixed at one end to a holder (figure 10, item 11) placed on a side of the base (fixed to side of base [10]) and fixed at the other end to a side surface of the bobbin (supports [53] connect the bobbin [53] to the holder [11]), and movably supporting the bobbin (column 16, lines 55-61);

A pair of magnetic circuits (figure 10, items 8a & 8c), each of the pair positioned on a different side surface of the bobbin and oppose each other (magnetic circuits are on different sides of bobbin and they oppose each other);

A focusing servo and a tracking servo (figure 10, the servo is the magnetic circuit consisting of printed coil boards [54a & 54b] and magnets [8a & 8c]);

A controlling unit controlling the focusing servo and the tracking servo (column 8, lines 20-26);

A magnetic circuit, comprising:

A magnet including first, second, third and fourth magnet parts (figure 11c, items 8a1, 8a2, 8a3 and 8a4), the first and second magnet parts (figure 11c, items 8a3 & 8a4) disposed adjacent to each other (figure 11c, 8a3 & 8a4 are adjacent to each other) and having opposite polarizations (figure 11c, opposing magnetic flux indicates opposite poles), the third and fourth magnet parts (figure 11c, items 8a1 & 8a2) respectively neighboring the first and second magnet parts (figure 11c) such that at least two sides thereof are enclosed by the first and second magnet parts (figure 11c, 8a1 & 8a2 are enclosed by 8a3 & 8a4), and having opposite polarizations to the first and second magnet parts (figure 11c, asymmetric magnetic flux indicates opposite polarizations), respectively;

A tracking coil (figure 11c, item 56) interacting with the first and second magnet parts (figure 11c) generating a driving force in a tracking direction (column 18, lines 43-49);

A first focusing/tilting coil (figure 11c, item 55b) interacting with the first and third magnet parts and a second focusing/tilting coil (figure 11c, item 55a) interacting with the second and fourth magnet parts, generating a driving force in

Art Unit: 2627

at least one of a focusing direction and a tilting direction including the focusing direction (column 18, lines 43-49);

Wherein a magnetic flux intensity distribution has an asymmetric shape (figure 11c, the magnetic flux intensity distribution is asymmetric as indicated by the arrows and the circles with dots and X's);

Wherein at least one of the first and second focusing/tilting coils and the tracking coil is a fine pattern coil (column 16, lines 44-46, printed circuit boards are fine coil patterns).

Santo et al fails to specifically disclose:

Wherein the position of the neutral zone between the first and third magnet parts and the position of the neutral zone between the second and fourth magnet parts along the focusing direction are changeable in order to optimize a tracking sensitivity.

Kasuga et al disclose:

Wherein the position of the neutral zone between the first and third magnet parts (figure 9, item Z) and the position of the neutral zone between the second and fourth magnet parts (figure 9, item Z) along the focusing direction are changeable (See figure 9) in order to optimize a tracking sensitivity (column 4, lines 16-28 & lines 61-67).

Wherein moving the position of the neutral zone (column 5, lines 1-13 & lines 20-34) changes the magnetic flux of the respective magnet parts (column 5, lines 13-19).

Art Unit: 2627

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place changeable gaps between Santo et al's magnets, as taught by Kasuga, because adjusting the height of the lens holder in the focus direction. When adding this feature to Santo et al's magnets, the L-shape of the magnets combined with the adjustment of the square magnet would provide for a change in the magnetic flux in both the tracking and the focus direction, therefore, one would be able to physically set the magnets for optimal sensitivity in the tracking direction. Furthermore, by adding the changeability to the magnets, the flux intensity distribution would be changing asymmetrically depending on how much each individual magnet was moved with respect to the spacing [Z]. This is discussed by Kasuga in column 4, lines 13-28.

Regarding claims 2, 6, 18, 22, 36, 38, 48, 56 and 69, Santo et al, in view of Kasuga et al disclose:

The magnetic circuit according to claim 1, wherein the first and second magnet parts are substantially  $\neg$ /L-shaped and symmetric (figure 11c, items 8a3 & 8a4).

Regarding claims 3, 7, 19, 23, 37 and 39, Santo et al, in view of Kasuga et al disclose:

The magnetic circuit according to claim 2, wherein the first and second magnet parts are substantially  $\neg$ /L-shaped and symmetric so that the magnetic circuit is used when a driving center is required to be positioned upward (figure 11c, indicated by arrow  $F_0$ ):



Regarding claims 12, 13, 28, 29, 42, 51, 59 and 72, Santo et al, in view of Kasuga et al disclose:

The magnetic circuit according to claim 1, wherein the magnet includes a 4-polarization surface-polarized magnet or a pair of 2-polarization surface-polarized magnets (figure 11c, 2 pair of oppositely polarized magnets).

Regarding claim 33, Santo et al, in view of Kasuga et al disclose:

The optical pickup actuator according to claim 17, wherein the end of the support fixed to the side surface that is different from the side surfaces on which the magnetic circuits are positioned (figure 10, bobbin is attached to supports on sides different from the magnetic circuit).

Regarding claim 34, Santo et al, in view of Kasuga et al disclose:

The optical pickup actuator according to claim 17, wherein either one of the first and second focusing/tilting coils and the tracking coil or the magnet is positioned on the side surface of the bobbin, and the other one is installed on the base (figure 10, item 54 is on the bobbin, item 8 is on the base).

Regarding claims 47, 55 and 68 Santo et al, in view of Kasuga et al disclose:

The magnetic circuit according to claim 46 (see claim 46), wherein the tracking coil generates a driving force in a tracking direction (column 22, lines 20-27), the first and second focusing/tilting coils generate a driving force in at least one of a focusing direction and a tilting direction including the focusing direction (column 22, lines 27-30).

Regarding claim 62, Santo et al, in view of Kasuga et al disclose:

The optical pickup actuator according to claim 54, wherein the actuator is applied to CD-RM, DVD-ROM, and CD-DVD compatible optical pickups (column 1, lines 31 & 32).

Regarding claim 63, Santo et al, in view of Kasuga et al disclose:

The optical pickup actuator according to claim 54, wherein the supports are wires or plate springs (figure 10, item 53).

Regarding claim 64, Santo et al, in view of Kasuga et al disclose:

The optical pickup actuator according to claim 54, wherein the number of supports is four or six (figure 10, 4 wires can be seen, 6 wires counting those unseen).

Regarding claim 65, Santo et al, in view of Kasuga et al disclose:

The optical pickup actuator according to claim 54, wherein the tracking coils and the first and second focusing/tilting coils are substantially rectangular in shape (figure 11, coils are rectangular).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew G. Kayrish whose telephone number is 571-272-4220. The examiner can normally be reached on 8am - 5pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Art Unit: 2627

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matthew G. Kayrish

11/29/2006

MK

  
11/29/06  
WAYNE YOUNG  
SUPERVISORY PATENT EXAMINER